RESEARCH PROBLEM STATEMENT

Problem Title: Vehicle Classification from TOC Video **No.:**05-05.7

1. Briefly describe the problem to be addressed:

Extract Vehicle Classification from TOC video into useful format for use by Data Collection Personnel and Pavement Design Engineers.

Strategic Goal:	9 Preservation	9 Operation	9 Capacity	9 Safety (Check all that apply)

2. List the research objective(s) to be accomplished:

1. This Project is to Implement successful preliminary UDOT research by capturing and recording TOC video split off normal camera video stream. This project is to demonstrate successful real-time classification of vehicles in the video. Video is to be collected from various lighting conditions.

2. Vehicles in the videos are to be counted and classified manually and automatically and the results tabulated for comparison.

3. List the major tasks required to accomplish the research objective(s): **Estimated person-hours**

1. Meet with TOC IT and Transcore on hardware recording to DVD (plus$2000equip.)	10hrs	$4000
2. Obtain test video under many light and weather conditions	40hrs	$2000
3. Have USU dept of Computer Science extract vehicle classifications (processing and modification to equations if required. (training of software)	240hrs	$26000
4. Manually classify vehicles in captured video	80hrs	in-house
5. Compare automated results with manual tabulation of the same captured video	80hrs	in-house
6. Acquire video for 24hr period and demonstrate live processing in AVI of system	10hrs	$1000
7. Write Validation Report that includes accuracy under various traffic and light conditions	80hrs	in-house
total	540hrs	$34,000

4. How will this project be implemented? (e.g. training, equipment, software, hardware, field demos, workshops, etc.) Actual streaming video will be processed, data extracted and binned for 15min and 1 hour segments.

9 Improved asset	9 Crashes reduced	9 Environmental benefit	9 Enhanced efficiency	9 Other

Improved data for asset management and Design

Improved safety for personnel

Higher accuracy for classification and longer duration of counts provide better statistical validity

(Please fill out other side of sheet as well.)

5. What deliverable(s) would you like to see? (e.g. useable technical product, technique, policy, procedure, specification, standard, software, training tool, etc.)

Report on the validity of video automated classification. Under what circumstances (weather, light, traffic vol.) does it do well, and when it fails.

6. Who in the Department could be the direct end-users of this study=s results?

Pavement Management Engineers
Planners
Data collection crews

7. How could the Department benefit from implementing the results of this study?

HPMS reporting to FHWA
Pavement Designers would have better data for overlay and pavement design

8. Estimate the cost of this research study including implementation effort (use person-hours from No. 3): $34,000

9. List the potential champions (people interested in and/or willing to participate in the Technical Advisory Committee for this study):

	Name	Organization/Division/Region	Phone	Attended UTRAC?
A)		Chris Glazier	965-4381	Y
B)		Hengda Cheng Utah State University		N
C)		Samuel Sherman ITS		N
D)		Richard Manser ITS		Y
E)		Doug Anderson	965-4377	Y
F)		Todd Hadden Program Development		Y
G)		George Ramjoue WFRC		Y

10. Identify other Utah agencies or groups that may have an interest in supporting this study: WFRC

9 City 9 County 9 MPO 9 Research Organization 9 Private Industry 9 University 9 Other

List names:

11. Identify other regional/national agencies or groups that may have an interest in supporting this study:

9 FHWA 9 USGS 9 EPA 9 NCHRP 9 TCRP 9 State DOT=s 9 Other

List names: